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JOB PROGRESS REPORT

State: Montana

Title: Western Montana Fisheries Investigation

Project No.: F-12-R-32

Title: Georgetown Lake Management Survey

Job No.: II-b

Period Covered: July 1, 1985-June 30, 1986

JOB OBJECTIVE AND DEGREE OF COMPLETION

1. To monitor the performance of two new rainbow strains in Georgetown Lake as well as the Arlee strain and the kokanee salmon.

The most consistent long term data for the fishery at Georgetown is that taken during the winter ice fishery. Twenty or more years of data are available for comparison with current conditions. The intensity of winter angling makes it feasible to collect information from large numbers of fish taken by anglers and alleviates the need to increase mortality by netting. Ice fishery data may also be collected in a cost effective manner.

Kokanee salmon provide a majority of the winter catch and are avidly sought by many anglers. Salmon size in recent years has been declining despite efforts to reduce numbers by reduction in spawning runs in Stuart Mill Creek and the elimination of catch limits. Table one shows average sizes of kokanee over winter for most years since 1966-67.

Table 1. Georgetown Lake Kokanee Lengths in Winter Angler Creel

Year	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74
Sample Number	34	55	No	20	149	717	302	No
Average Length	12.3	10.7	data	11.4	10.9	10.6	9.9	data
Year	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82
Sample Number	No	14	346	194	119	7	127	No
Average Length	data	11.5	10.8	9.2	7.9	8.2	8.4	data
Year	82-83	83-84	84-85	75-86				
Sample Number	No	46	96	133				
Average Length	data	7.8	8.2	9.1				

Average size of kokanee seems to have increased substantially in 1985-86. The reason for the increase is unclear. Data from 1986-87 will be most interesting. Figures 1, 2 & 3 present data for kokanee lengths in winter creel during 1984, 1985 and 1986.

Rainbow trout lengths are presented in Table 2.

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Table 2. Georgetown Lake Rainbow Length from Winter Angler Creel.

Year	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74
Sample Number	214	306	No	247	555	1407	888	No
Average Length	11.7	11.3	data	11.1	10.1	10.6	10.7	data
Year	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82
Sample Number	No	45	247	171	165	30	124	No
Average Length	data	10.4	10.6	10.0	9.9	11.2	9.7	data
Year	82-83	83-84	84-85	85-86				
Sample Number	No	3	42	296				
Average Length	data	9.7	9.8	11.5				

Of greatest interest is the more than 1.5 inch increase in average size in 1985-86 in comparison to 1984-85. Part of this increase is no doubt the result of reduced harvest and the resultant increase in fish growth before harvest. The second, less obvious factor, is that success on rainbows was so high that anglers tended to release fish smaller than 10 inches and fill their limits with larger fish. It seems that the 5 fish trout limit is achieving the desired effect of increasing the average size of fish creeled. Since more fish are being carried to older ages, it will be necessary to compensate by reducing numbers of fish stocked in future years to avoid a reduction in growth rate.

Performance data on the three strains of rainbow introduced into Georgetown in 1984 are presented in Table 3. Stockings from 1963 to 1984 were exclusively of the Arlee strain. Arlee fish exceeding 13 inches were probably from 1983 or earlier. All three strains exhibited similar growth rates. Catchability of the Eagle Lake strain was similar to that of the Arlee. Kamloops data was very limited reflecting the small number stocked and their small size at introduction. Survival was probably poor in 1984. An additional factor in the small Kamloops number in the creel may be due to reduced catchability of this strain.

Length frequencies of angler catches of the three rainbow strains are presented in Figures 3, 4, and 5. It would appear that Arlee stocked in June at 5 inches entered the winter catch in the 8 to 10 inch size classes. Eagle Lake strain length frequencies for the 1985 winter fishery were comprised of 1984 introductions plus a very small 1985 component in the 6 to 9 inch category. Both Eagle Lake and Kamloops from the 1984 stockings should enter the size classes in the 1985 season and should begin feeding on forage fish. Data collected in January of 1987 should be most informative as to the performance of the new strains.

No management changes are anticipated for the next year with the exception of a reduction in stocking number from about 300,000 to 180,000-200,000.

Table 3. Georgetown Lake rainbow strain evaluation winter 1985-86

Location	Stocking date	Size	Number	%	Sample No.	% Catch	Mean length	Range
Arlee	6-84/85	5"	157273	53	210	71	11.6"	8.4"-15.7"
Eagle Lake	9-84	5"	100556	34	84	28	11.2"	6.0"-12.9"
Kamloops	8-84	3"	38115	13	2	1	11.4"	9.8"-12.9"
Total			295944	100	296	100	11.5"	6.0"-15.7"

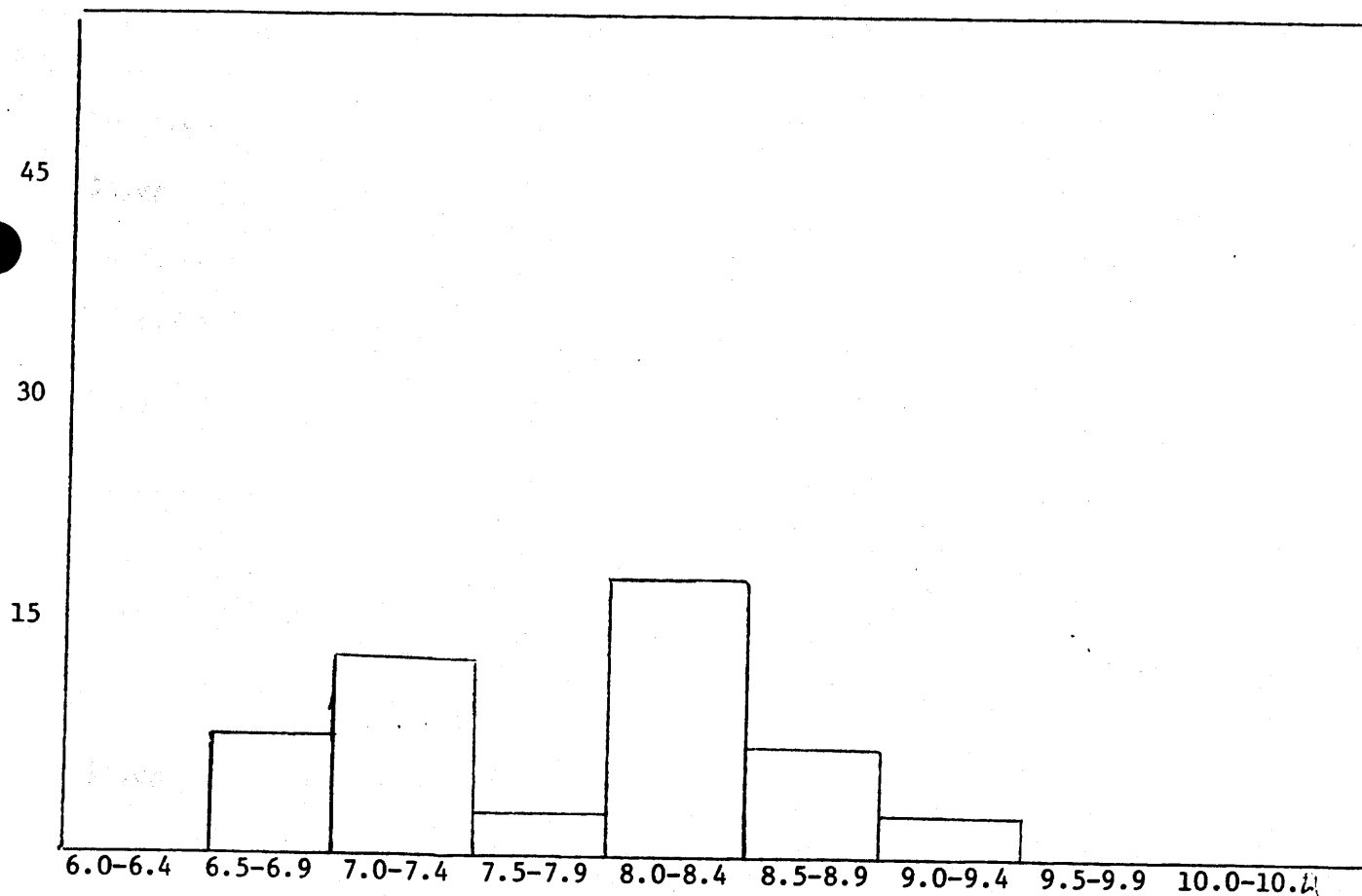


Figure 1. Georgetown Lake Kokanee angler creel sample, N=48, January 24, 1984

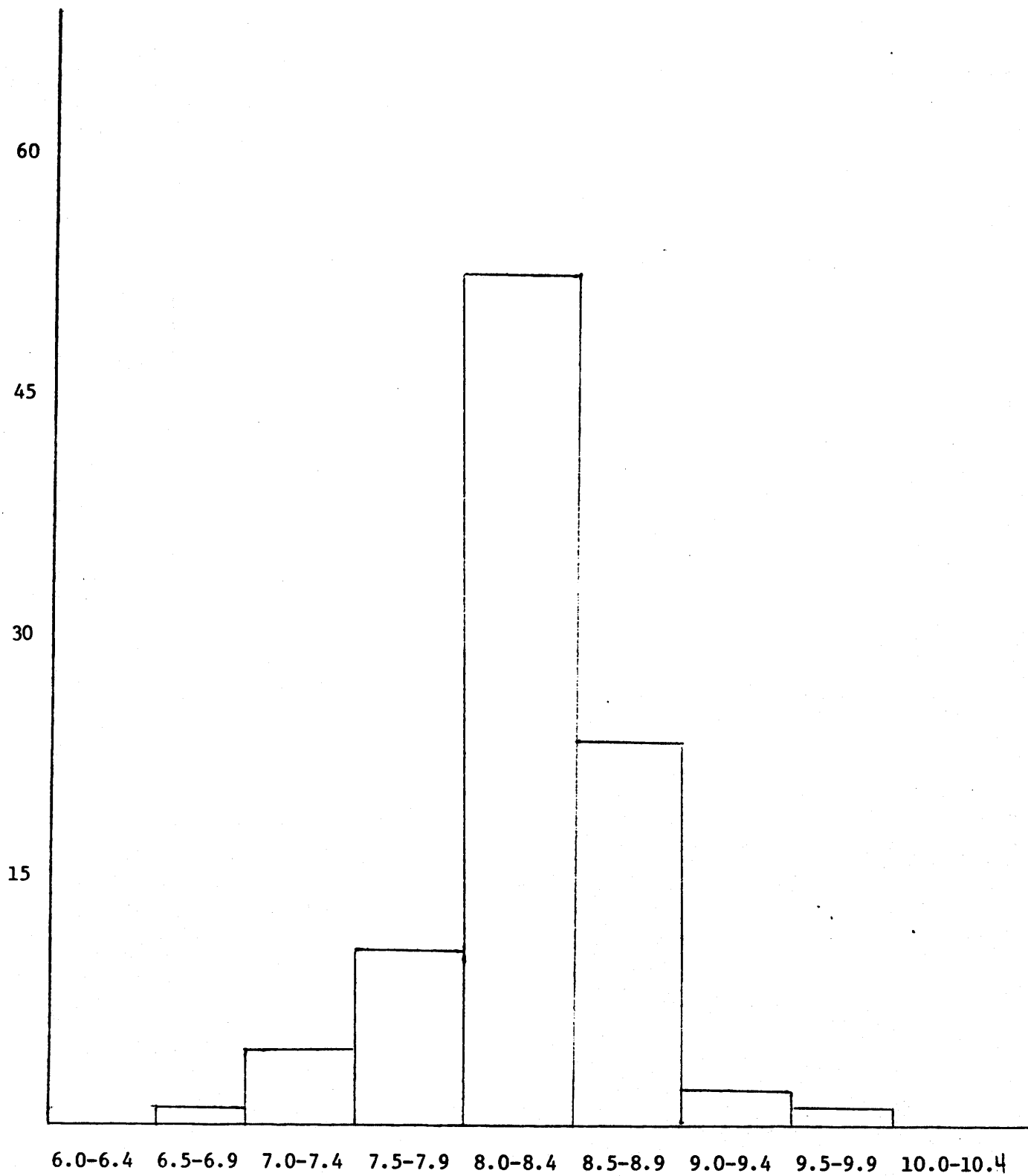


Figure 2. Georgetown Lake Kokanee angler creel sample, N=96, January 14 & 17, 1985

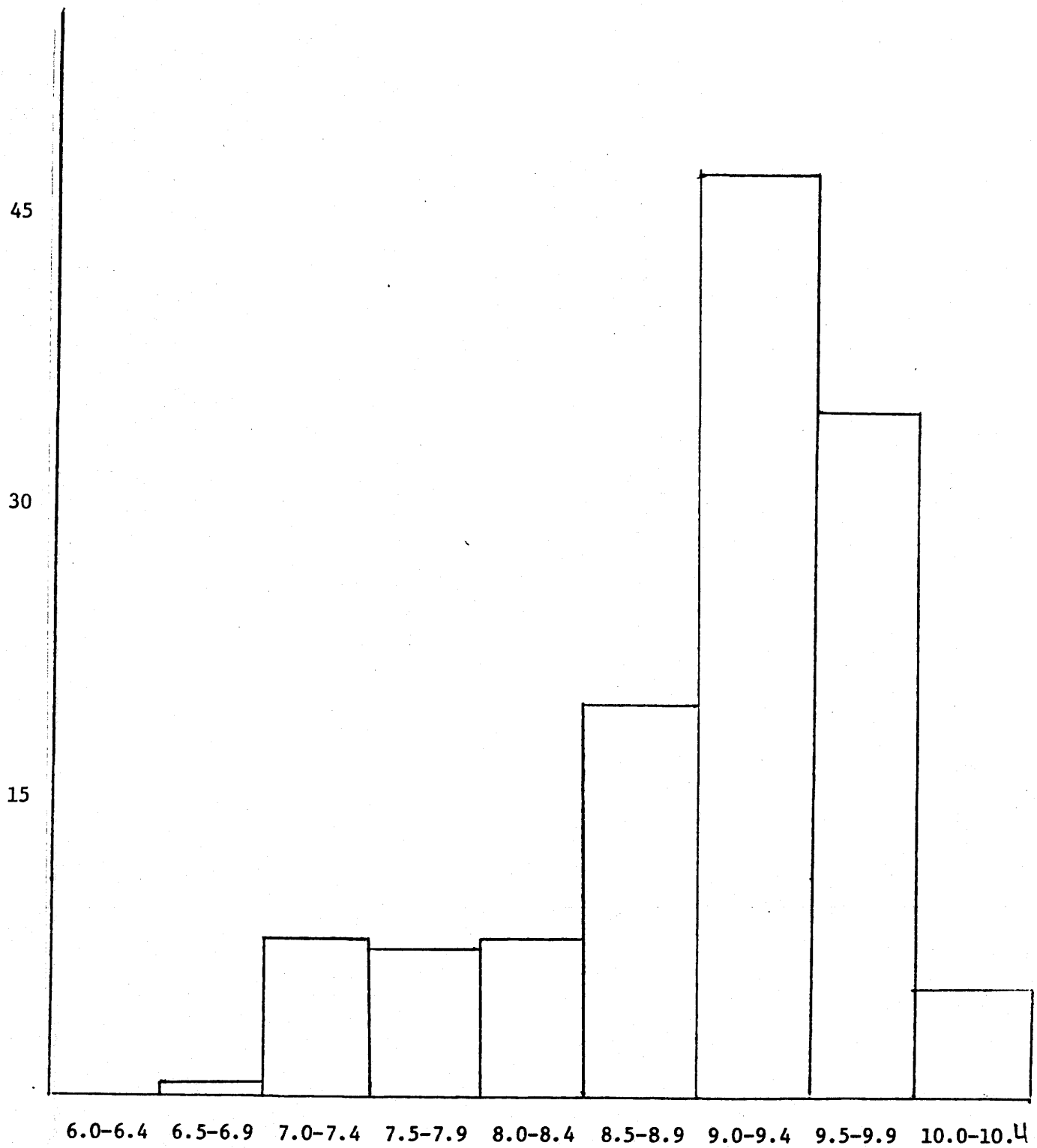


Figure 3. Georgetown Lake Kokanee angler creel sample, N=133, January 19, 1986

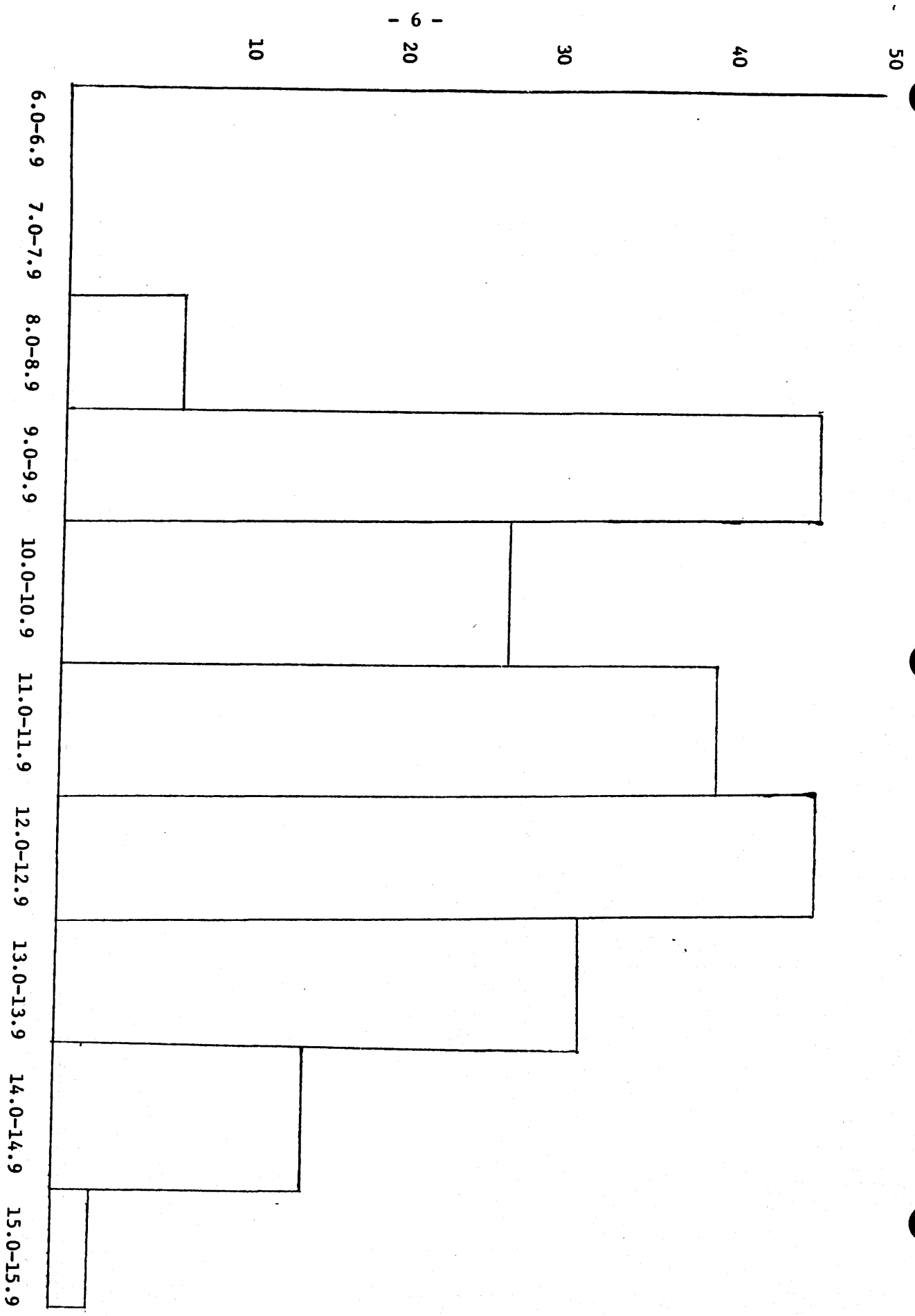


Figure 4. Length frequency Arlee rainbow - Georgetown, winter 1985-86, N=210

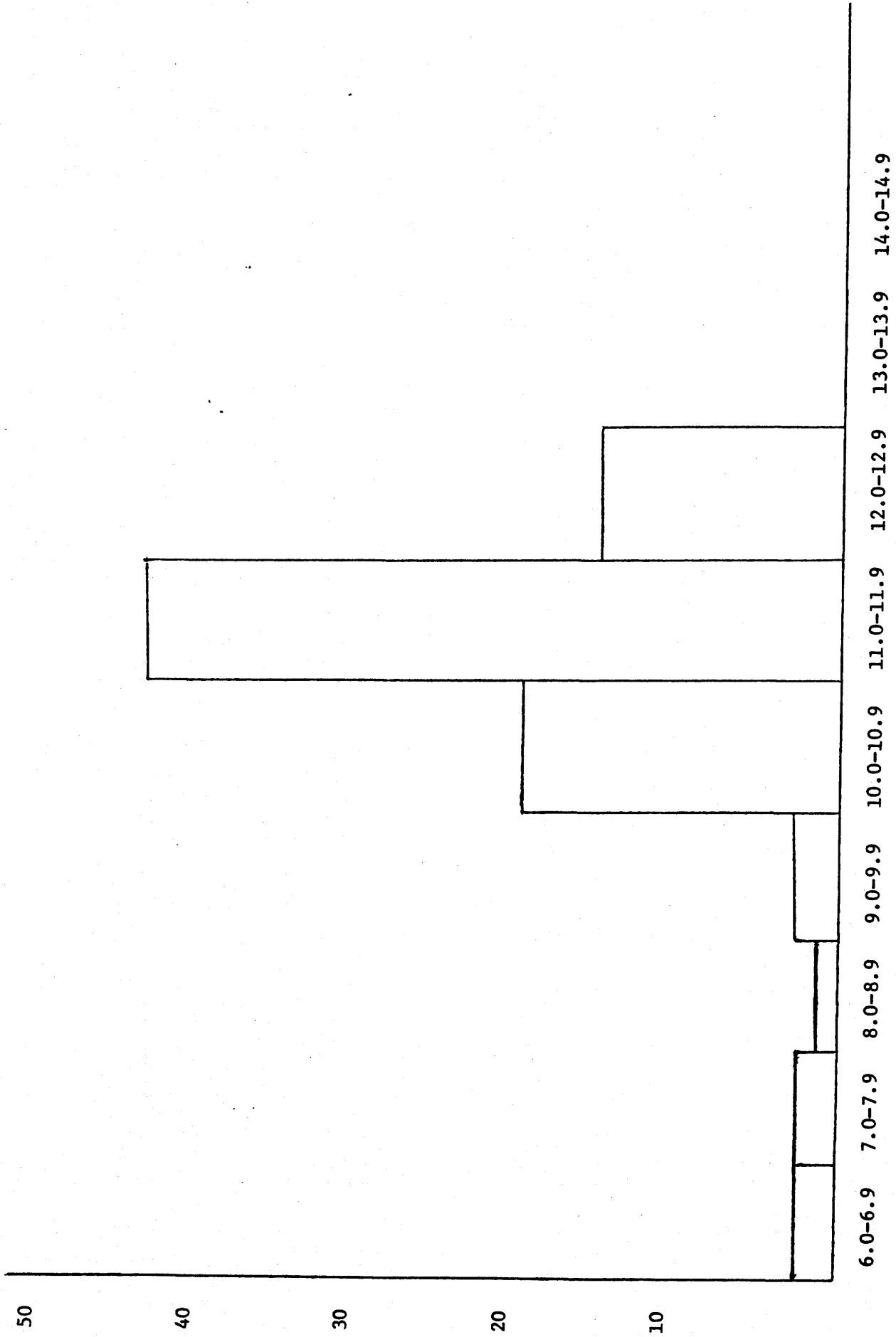


Figure 5. Length frequency Eagle Lake rainbow, angler creel, Georgetown, winter 1985-86, N=84

2. To determine the acceptability of new Georgetown Lake fishing regulations with the public and propose a change to the commission if acceptable.

Effective in license year 1985-86 new regulations were imposed at Georgetown Lake. Impetus for the regulatory changes came from requests by sportsmen for better quality fishing and from fisheries data indicating a long term decline in fish size. Trout limits were reduced from 10 rainbows and 20 brook trout to 5 trout of any species. Season duration was lengthened by the elimination of the early winter closure and extension of the ice fishery through March 31. This resulted in an expansion of fishing opportunity from 240 to 314 days per year. Two new strains of rainbow were added to the stocking with the hope that they would achieve larger sizes and become predators on the overabundance of kokanee. Evaluation of the success of the new management effort was begun in January of 1986.

3. To measure dissolved oxygen concentrations during the period of ice cover on Georgetown Lake.

Dissolved oxygen concentrations in Georgetown Lake were monitored monthly during the period of safe ice cover. Oxygen concentrations observed were within the normal range for Georgetown, no significant winterkill was anticipated and none occurred.

Prepared by: Wayne F. Hadley

Date: July, 1986